

Technical Interview – Homework

1. Interactive Interview Simulation with ChatGPT

Practice with a **simulated practical interview session** using **ChatGPT as an interactive technical interviewer**. Open ChatGPT (<https://chat.openai.com>) and enter the following **prompt**:

Interview Simulation Prompt for ChatGPT

I am applying for “junior Java developer”. I want to train my interview skills. This is a technical interview with a recruiter. Act as a recruiter, but wait for my response, before you ask me the next question. After each answer I give you, give me feedback by rating my answer on the scale from 1 to 10, also tell me what is missing or incorrect in my answer before asking me the next question.

This is how your **interactive interview session** may look like:



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 I have attended the "Java Web developer" track at SoftUni. I have passed many trainings: Java Basics, Java Advanced, Object-Oriented Programming with Java, Databases and SQL, Hibernate and Spring Data, Java Web development with Spring MVC and Spring Boot. I have also taken JavaScript coding courses: JS Basics, JS Advanced, JS Apps. I have taken many coding exams and have solved thousands of coding exercises. I have a few software projects from the SoftUni courses in my GitHub profile.



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 Thank you for sharing your experience with Java development. It's great that you've attended various Java-related courses and have a solid foundation in Java Basics, Java Advanced, Object-Oriented Programming, and other relevant topics. Your exposure to databases, SQL, Hibernate, and Spring Data is also valuable.

Having completed JavaScript courses, including JS Basics, JS Advanced, and JS Apps, shows your versatility in web development.

Having solved thousands of coding exercises and taken coding exams demonstrates your commitment to honing your skills.

Having software projects on your GitHub profile is a great way to showcase your work and provide tangible evidence of your abilities.

Overall, I would rate your answer a 9 out of 10. It provides a comprehensive overview of your training and experience. The only





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Now, let's move on to the next question:


Recruiter: Can you explain the concept of object-oriented programming (OOP) and how it relates to Java development?

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 OOP is about classes and objects. Classes model real-world entities and have data + logics. Data is stored in fields and properties, logic is implemented as methods. OOP also defines data encapsulation, interfaces, inheritance, polymorphism. Java is object-oriented language. Each Java project consists of set of classes.



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You correctly pointed out that Java is an object-oriented language and that Java projects consist of sets of classes.


Overall, I would rate your answer a 7 out of 10. You covered the basics of OOP and its relation to Java development. However, it would be beneficial to provide a bit more depth and examples to demonstrate your understanding of these concepts. Additionally, consider explaining the benefits and advantages of using an object-oriented approach in software development.

Now, let's move on to the next question:

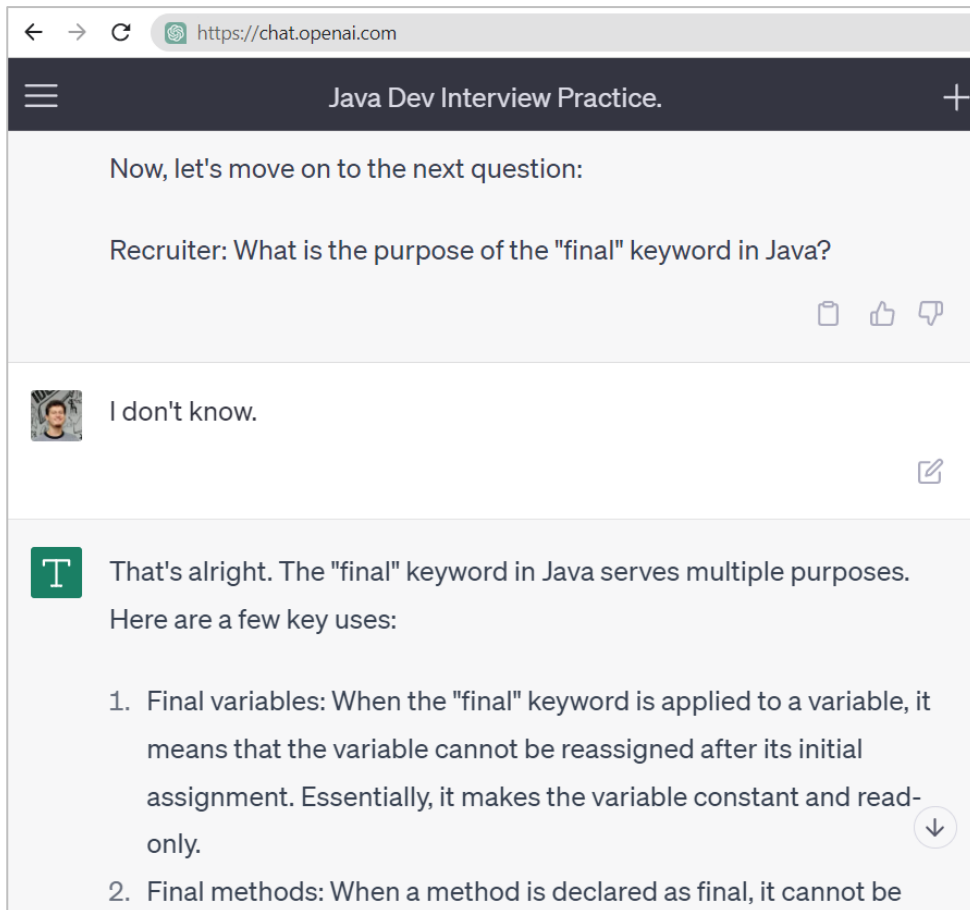
Recruiter: Can you explain the difference between the "==" operator and the "equals()" method in Java?

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 Thank you for your response. However, there is actually a significant difference between the "==" operator and the "equals()" method in Java.

The "==" operator is used for reference comparison. It checks if two variables refer to the same memory location, essentially comparing their memory addresses. In other words, it checks if two objects are exactly the same instance.



2. Answer Technical Interview Questions

You are given a couple of **job postings**. Your task is to **pick one of them** and **answer the sample technical interview questions** in the blank cells on the right side:

- [Junior .NET Developer](#)
- [Junior Java Developer](#)
- [Junior JavaScript Web Developer](#)
- [Junior Python Developer](#)
- [Junior QA Engineer](#)

Junior QA Engineer – Interview Questions

Answer the following **sample interview questions** to prepare for a technical interview. When you need to write code, or draw something, feel free to use any tool for the purpose (for example Paint), afterwards insert your screenshots in the table below. Finally, upload the filled table with your answers in the course Web site.

1. How would you test a login form in a mobile app?	<p>I will start with manual testing scenarios:</p> <ul style="list-style-type: none"> - functional and error handling testing suites– I will test the login form with valid username and password (golden path) and will continue with wrong username/valid password, wrong password/valid username. In which case I will check the appropriate messages. Check any other feature if it's present – remember/see user details, etc. In addition, I will check if the user interface - fonts, size and appearance of the elements is according to the description. <p>In addition, I will perform an automated tests including:</p>
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	<ul style="list-style-type: none"> - unit tests for each component of the log in form authentication, validation and error handling; - integration tests – how interaction between different parts of the app will happen, navigation throw different parts of the app, error handling, etc. - user interface testing – testing the user interaction with the app behavior from different devices and sizes using automated frameworks - Appium <p>I will perform also a security testing for SQL injection or other injection vulnerabilities', password policies tests - min, max length, characters</p> <p>Also, a performance testing could be performed checking the app performance under many consequent login attempts. The response time of the login process could also be tested.</p> <p>The final tests could check the compatibility of the form on various devices and operation systems as well as it's regression towards any changes and the accessibility of the app from user with disability – screen readers and proper labeling</p>
2. What happens when you find a bug during the testing process?	<p>When I find a bug, first I will log in into the bug tracking system or the issues tracking system used by the company. The bug will be log in according to the standards used including steps to reproduce, the expected and actual behavior, some screenshots. The bug should be prioritized considering the severity and the impact of the bug and assigned to a developer or a team to be fixed. After the bug is fixed, I should test it again and verify the solution. In some cases, regression testing should be performed. If the bug fix is verified and accepted, the bug is closed and documented.</p>
3. What is functional testing ? Give me an example.	<p>Functional testing is a type of testing in which the functionality of a software is analyzed by testing its components against their specification requirements. Types of functional testing are: unit testing, integration testing, system testing, acceptance, smoke and regression testing. An example is the functional testing of any web store application in which we test the registration, the log in, the add to cart, the check out, the payment, etc.</p>
4. What is non-functional testing ? Give me an example.	<p>Non-functional testing focuses on how well the system performs under various conditions and is related to specific functionalities such as overall quality, performance, usability, security, etc. An example is the error handling/security testing in a web store application in which we supply a non-valid data for login or other application requirements and the application give proper error messages without revealing sensitive information.</p>
5. What is regression testing ? Give me an example.	<p>Regression testing is a type of testing in which the software functionality is tested to ensure that the recent changes in the code do not affect adversely the software functionality. An example can be the retesting of the basic functionalities of any software after change or addition of a new functionality.</p>
6. Can you draw the typical software development life cycle (SDLC)? Where the QA stays within it?	<p>The different phases of software development life cycle are:</p> <ul style="list-style-type: none"> - collecting requirements and system specifications; - design and planning; - development and coding;

	<ul style="list-style-type: none"> - testing; - deployment; - release; - maintenance; - feedback and iteration <p>The QA plays' role in any stages as the most important part is in the testing phase in which the QA prepares test plans, test scenarios, test data as well as test execution and bugs reporting and management.</p>
<p>7. What is the typical bug lifecycle? What are the different states of a bug?</p>	<p>The bug lifecycle includes different stages where a bug goes starting from its detection until its closing. The stages are:</p> <ul style="list-style-type: none"> - Open – the bug is found and reported; - Assigned – the bug is assigned to a developer or a team of developers for fixing. - In progress - the work on bug resolution has started; - Fixed – the bug is fixed, and the code is changed; - Verified – the code is retested by the QA to verify that the problem is fixed. If the bug is resolved, the bug is marked as verified; - Closed – once in has been verified, the bug is closed and removed from the active list of issues
<p>8. Your team develops a web-based project management tool where users can create tasks, assign them to team members, and track progress. As a QA, you need to test the "Create task" functionality. What tests shall you design?</p>	<p>First, I will perform functional tests and test the basic functionality - create task will all the requirements needed, tests the boundary conditions –the title of the task, the mandatory fields, the optional fields, the special characters and symbols, the empty fields, etc.</p> <p>After this, I will perform integration tests and will test how the newly created task interacts with other features – appearance in the task list, proper assignment, e-mail notification, etc.</p> <p>The UI test will be performed also testing the proper appearance of all buttons related to the task, that they function properly and that they are displayed correctly across various devices –tablets, phones, PC and operational systems and browsers.</p> <p>Security tests will the perform also testing the SQL injection by attempting to inject SQL commands into the task fields and ensure that the system prevents such attacks. The data validation tests can be performed also ensuring that once the task is created it is stored correctly in the database and can be retrieved correctly.</p> <p>Performance tests testing the response time under different loads conditions or large amount of tsks can be tested.</p>
<p>9. Your team develops a mobile app that allows users to create and edit notes. As a QA, you need to test the "Delete note" functionality. What tests shall you design?</p>	<p>First, I will perform functional tests and test the basic functionality of the mobile app – if the note is deleted correctly, note selection by ID, name, etc. and the mandatory and optional fields, deleting confirmation and undo functionality. Next, I will perform integration tests and tests if the note deletion removed remove it from all other associated lists. Also, I will test the behavior of other parts and the note deletion in any cloud or server storages. In addition, I will perform data integrity validation tests and check when the note is delayed it's removed from app's database or storage. I will perform also security tests, testing for</p>

	<p>unauthorized deletion and will verify that the user can only his notes and will test the deletion of any sensitive data from app storage. At the end I will perform a performance test, testing system response time and scalability.</p>
<p>10. You are given a mobile app and you need to test it for UI issues on all major mobile platforms. You don't have the required physical devices. How would you proceed?</p>	<p>I will use emulators and simulators provided by different mobile SDKs platforms such as Android Studio's Emulator and iOS Simulator, which replicate the behavior of actual devices and will give me different tests environments on various device configurations. In addition, I will perform UI automated tests using Appium, which could be used for Android and iOS and give me the opportunity to test my app's UI elements automatically and to identify any UI issues across different platforms.</p>
<p>11. Suppose you are tasked with performing smoke testing on a new e-commerce website. What shall you test? Be sure to include the major components under testing, as well as any other systems or processes that would need to be involved.</p>	<p>I will start by testing the basic functionality of this homepage – checking all homepage elements such as logo, navigation menu, search bar, product listings, product details page, the shopping cart and checkout process. Next, I will test account management testing user registration and login process as well as the account dashboard and information. I will test the also the searching and navigation functionality and the payment and ordering processes including secure payments and order confirmation. In addition, I will check if the page is compatible with different browsers and if it's responsive on different devices. Finally, I will perform load and scalability tests and security testing including data encryption and secure connection.</p>
<p>12. You are given a RESTful Web API for an image generation app (register, login, generate image by description). How would you test it? Which tools shall you use?</p>	<p>I will perform different types of manual tests, testing the API endpoints, input validation, registration and login, error handling and image generation. In addition, I will perform automated tests on API different endpoints using automated API testing frameworks like Postman. I will perform also integration tests using tools like XUnit or NUnit to test the integration between different API endpoints and to ensure that they interact as expected.</p>
<p>13. Do you have experience with automated testing tools? What tools do you have experience with? Give me an example.</p>	<p>Currently, I have experience with Postman, XUnit or NUnit, RestSharp. Later in the program I will gather experience with Selenium Wed Driver and with Appium.</p>
<p>14. How would you write unit tests to check if given sorting algorithm works as expected?</p>	<p>First, I will identify the test cases based on the different types of input arrays. Next, I will develop the tests methods for the different test cases in which I will take the array, apply the algorithm and assert that the sorted array matches the expected result. As a testing platform I will use NUnit or XUnit.</p>
<p>15. You are given a back-end Web application. You are assigned to write an integration test for the</p>	<p>First, I will identify the different test scenarios based on the system requirements. The scenarios could be testing user registration with valid data, testing user registration with invalid data and testing different edge</p>

“user registration” functionality. How would you proceed?	cases. Next, I will set up a test environment which closely resembles the production set up and will create a separate database instance. After this I will write test cases for each identified scenario and implement the test cases by sending HTTP requests to the back-end API end points responsible for user registration, input data and responses. Next, I will verify that the backend response is as expected against user registration. And at the latest stage I will clean up the database and review the tests results and if it is needed perform a test changes.
16. You are given a back-end Web application . You are assigned to write an end-to-end UI automated tests for the “user login” functionality. How would you proceed?	I will start with identifying the test scenarios by carefully reading and understanding the application documentation. The test scenarios could be testing with valid login with correct credentials, testing with invalid login with incorrect credentials, handling of edge cases - expired sessions, locked accounts, large data, and any additional features like multi-factor authentication. Next, I will set up the test environment, which should closely resemble the production environment and will involve deploying the backend application, set up a test database and mock services for third parties. The testing framework which I will chose is a Selenium Web Driver on which I will write the test cases for each scenario and implement them. At the later stage I will verify the expected behavior and clean up the test data.
17. You are given a simple voting mobile app . You are assigned to write automated UI tests for the “view voting results” functionality. How would you proceed?	First, I will select a suitable test framework for writing automated UI tests such as Appium. After this, I will set up the testing environment by installing the necessary software tools, SDKs, and dependencies and Identify the UI elements related to the "view voting results". Next, I will write the tests scenarios and scripts using asynchronous operations and run the tests. Finally, I will analyze the tests and refine them if it’s needed.
18. You are given a Web app, which is deployed in a cloud environment. You need to test it for performance to ensure it can serve at least 1000 concurrent users. What tools shall you use and how?	To tests the performance of the Webb app serving at least 1 000 consequent users, I will use the Apache JMeter, which can simulate various load scenarios and measure the performance of web applications. Additionally, I can use other tools such as Gatling or LoadNinja to perform such tests.
19. You have a Web-based e-commerce app. How would you perform security testing to ensure it is resistant to attacks? What kind of attacks will you look for?	First, I will perform the authentication and authorization testing, checking the passwords for weakness, insecurity, and unauthorized access for sensitive data. The input fields will be tested for proper validation and sanitization to prevent injection attacks such as SQL injection, XML injection, and command injection. Also, I will perform tests verifying that sensitive information such as passwords, payment details, and personal data are encrypted during transmission using HTTPS. Additionally, I will test the error handling and logging and security of third-party libraries.
20. How would you automate the testing of a highly dynamic Web application, which changes its UI when you move the mouse over it?	One way is to use headless browser automation tools such as Selenium WebDriver, which can give me the option to interact with web pages programmatically without a visible browser window.